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TECHNOLOGY AND INNOVATION

A paradigm shift in global outreach: the collaborative Cancer Project Map as a platform for government and non-government international efforts

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Program/Project Purpose: Only 5% of the global cancer funds go towards 80% of the cancer-burdened population. Unfortunately, this imbalanced distribution of resources does not address the 65% of new cancer cases and 70% of cancer deaths occurring in low- and middle-income countries (LMICs). To better serve the international cancer community, Global Oncology, Inc. (GO) and the Center for Global Health (CGH) at the National Cancer Institute launched a free, online interactive tool called the Global Cancer Project Map (GCPM: http://gcpm.globalonc.org/map), which allows policy makers, researchers, program directors, and civil society from around the world to search a central repository of cancer-related, internationally-focused projects. GCPM's goal is to catalyze global cancer research and cancer control collaboration and to identify gaps by sharing this platform of outreach integration for government and non-government efforts.

Structure/Method/Design: The GCPM catalogs and geocodes cancer research and control projects on an interactive world map. Users can search projects by country, cancer type, institution, funding, and project dates, and view project details including abstracts, collaborators, and project website. The GCPM also provides map overlays of cancer-specific epidemiological measures and public health indicators, including cancer incidence, and the human development index.

Outcome & Evaluation: As of October 2015, the map contains over 1400 projects and 2270 collaboration sites across 119 countries. Of these collaboration sites, 54% are in the Americas, 28% are in Europe, 13% are in Asia and the Pacific, and 5% are in Africa and the Eastern Mediterranean. While the map currently includes research projects that primarily occur in high-income countries, efforts to expand the map to include research being performed in low and middle income countries is underway. Beginning in 2016, the GCPM will have been featured at 2 domestic conferences and 3 international conferences, and will feature additional project data from AORTIC, ASCO, and UICC partners.

Going Forward: In the next phase of the GCPM, we plan to expand search functionality, feature additional international projects, create an online data collection platform, and improve data usability.

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Multicentric study of immunological markers predictive of infection post-renal transplant

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Background: Post solid organ transplant infections and rejections continue to be major causes of patient mortality despite advances in immunosuppression and anti-infectious prophylaxis.

This is a multicentric investigation conducted in Santander, Spain to examine the use of markers of immunity to predict the development of infections in transplant patients. The research model was first developed in heart transplant patients, applied to lung and liver transplant patients, and is currently being used to analyze renal transplant patients. Our goals in this study are to define the IgG, IgA, IgM, C3, and C4 profiles of patients pre- and post-renal transplant, as well as to establish a relationship between the defined serum soluble immune markers and the development of infections post-renal transplant.

Methods: We retrospectively analyzed clinical data collected using nephelometry from HUMV (Hospital Universitario Marqués de Valdecilla) patients (n = 27) between the years of 2010-2014.

Clinical data included pre-transplant comorbidities, etiology of underlying end-stage renal disease, pre-transplant renal replacement therapy, treated infections before transplantation, pre-transplant serology, vaccines before transplantation, donor serology, antimicrobial prophylaxis, post-transplant immunosuppressive therapy, post-transplant interventions, post-transplant complications, and total number of infectious episodes post-transplant.

The data was analyzed using the statistical program SPSS (version 20.0). First, we looked at the total immunoglobulin and complement levels during the three time points (day 0, day 15, and day 30) to determine if a trend existed relative to transplantation. Next, we separately examined immunoglobulin and complement levels at day 0, day 15, and day 30 relative to number of infections developed post-transplant. Non-parametric statistical analysis was performed and the data was expressed as median and range values, as well as percentages. Statistical significance was considered when a p value <0.05 was obtained.

Findings: Post-renal transplant immunosuppressive therapy lowered total immunoglobulin levels, especially IgG levels. We expected to find an inverse relationship between levels of serum immunoglobulins and number of post-transplant infections, but the data did not support this hypothesis. We did not see a change in C3 and C4 levels pre- and post-transplant. However, complement data was only included as a control to monitor patient renal function (a decrease in complement level would suggest protein or volume loss).

Interpretation: We expected and found lower total immunoglobulin levels after transplant surgery. However, we also expected to find that patients with lower levels of serum immunoglobulins would have a higher number of post-transplant infections, but this